

SEQUENCE LISTING

<110> REGENTS OF THE UNIVERSITY OF MINNESOTA

<120> HOMOLOGOUS RECOMBINATION IN MULTIPOTENT ADULT
PROGENITOR CELLS

<130> 890003-2003.WO

<140> PCT/US03/38811

<141> 2003-11-25

<150> 60/429,631

<151> 2002-11-27

<150> PCT/US02/04652

<151> 2002-02-14

<150> PCT/US00/21387

<151> 2000-08-04

<160> 5

<170> PatentIn Ver. 3.2

<210> 1

<211> 1674

<212> DNA

<213> Homo sapiens

<400> 1

```

atggctcaag attcagtaga tctttcttgt gattatcagt tttggatgca gaagctttct 60
gtatgggatac aggtctccac tttggaaacc cagcaagaca cctgtcttca cgtggctcag 120
ttccaggagt tcctaaggaa gatgtatgaa gccttgaaag agatggattc taatacagtc 180
attgaaagat tccccacaat tggtaactg ttggcaaaag cttgttgga tccttttatt 240
ttagcatatg atgaaagcca aaaaattcta atatggtgct tatgttgtct aattaacaaa 300
gaaccacaga attctggaca atcaaaactt aactcctgga tacaggggtg attatctcat 360
atactttcag cactcagatt tgataaagaa gttgctcttt tcaactcaagg tcttgggtat 420
gcacctatag attactatcc tggtttgctt aaaaatatgg tttatcatt agcgtctgaa 480
ctcagagaga atcatcttaa tggatttaac actcaaaggc gaatggctcc cgagcgagt 540
gcgtccctgt cactgagttg tgtccactt attaccctga cagatgttga cccctgggtg 600
gaggtctctc tcactgttca tggacgtgaa cctcaggaaa tccctccagcc agagtctctt 660
gaggtctgaa acgaggccat tttgctgaag aagatttctc tccccatgct agctgtagtc 720
tgctctctggc ttcggcacct tcccagcctt gaaaaagcaa tgctgcatct ttttgaaaag 780
ctaactctca gtgagagaaa ttgtctgaga aggatcgaat gctttataaa agattcatcg 840
ctgcctcaag cagcctgcca ccctgccata ttccgggttg ttgatgagat gttcaggtgt 900
gcactcctgg aaaccgatgg ggccctggaa atcatagcca ctattcaggt gtttacgcag 960
tgctttgtag aagctctgga gaaagcaagc aagcagctgc ggtttgact caagacctac 1020
tttcttaca cttctccatc tcttgccatg gtgctgtgc aagaccctca agatatccct 1080
cggggacact ggctccagac actgaagcat atttctgaac tgctcagaga agcagttgaa 1140
gaccagactc atgggtcctg cggaggtccc tttgagagct gggtcctgtt cattcacttc 1200
ggaggatggg ctgagatggg ggcagagcaa ttactgatgt cggcagccga accccccacg 1260
gccctgctgt ggctcttggc cttctactac ggccccctg atgggaggca gagagcacag 1320
actatgggtcc aggtgaaggc cgtgctgggc cacctcctgg caatgtccag aagcagcagc 1380

```

```

ctctcagccc aggacctgca gacggtagca ggacagggca cagacacaga cctcagagct 1440
cctgcacaac agctgatcag gcaccttctc ctcaacttcc tgctctgggc tcctggaggc 1500
cacacgatcg cctgggatgt catcacctg atggctcaca ctgctgagat aactcacgag 1560
atcattggct ttcttgacca gacctgttac agatggaatc gtcttggcat tgaaagccct 1620
agatcagaaa aactggcccc agagctcctt aaagagctgc gaactcaagt ctag 1674

```

<210> 2

<211> 557

<212> PRT

<213> Homo sapiens

<400> 2

```

Met Ala Gln Asp Ser Val Asp Leu Ser Cys Asp Tyr Gln Phe Trp Met
  1             5             10             15

```

```

Gln Lys Leu Ser Val Trp Asp Gln Ala Ser Thr Leu Glu Thr Gln Gln
      20             25             30

```

```

Asp Thr Cys Leu His Val Ala Gln Phe Gln Glu Phe Leu Arg Lys Met
      35             40             45

```

```

Tyr Glu Ala Leu Lys Glu Met Asp Ser Asn Thr Val Ile Glu Arg Phe
  50             55             60

```

```

Pro Thr Ile Gly Gln Leu Leu Ala Lys Ala Cys Trp Asn Pro Phe Ile
  65             70             75             80

```

```

Leu Ala Tyr Asp Glu Ser Gln Lys Ile Leu Ile Trp Cys Leu Cys Cys
      85             90             95

```

```

Leu Ile Asn Lys Glu Pro Gln Asn Ser Gly Gln Ser Lys Leu Asn Ser
      100            105            110

```

```

Trp Ile Gln Gly Val Leu Ser His Ile Leu Ser Ala Leu Arg Phe Asp
      115            120            125

```

```

Lys Glu Val Ala Leu Phe Thr Gln Gly Leu Gly Tyr Ala Pro Ile Asp
      130            135            140

```

```

Tyr Tyr Pro Gly Leu Leu Lys Asn Met Val Leu Ser Leu Ala Ser Glu
      145            150            155            160

```

```

Leu Arg Glu Asn His Leu Asn Gly Phe Asn Thr Gln Arg Arg Met Ala
      165            170            175

```

```

Pro Glu Arg Val Ala Ser Leu Ser Arg Val Cys Val Pro Leu Ile Thr
      180            185            190

```

```

Leu Thr Asp Val Asp Pro Leu Val Glu Ala Leu Leu Ile Cys His Gly
      195            200            205

```

```

Arg Glu Pro Gln Glu Ile Leu Gln Pro Glu Phe Phe Glu Ala Val Asn
      210            215            220

```

Glu Ala Ile Leu Leu Lys Lys Ile Ser Leu Pro Met Ser Ala Val Val
 225 230 235 240
 Cys Leu Trp Leu Arg His Leu Pro Ser Leu Glu Lys Ala Met Leu His
 245 250 255
 Leu Phe Glu Lys Leu Ile Ser Ser Glu Arg Asn Cys Leu Arg Arg Ile
 260 265 270
 Glu Cys Phe Ile Lys Asp Ser Ser Leu Pro Gln Ala Ala Cys His Pro
 275 280 285
 Ala Ile Phe Arg Val Val Asp Glu Met Phe Arg Cys Ala Leu Leu Glu
 290 295 300
 Thr Asp Gly Ala Leu Glu Ile Ile Ala Thr Ile Gln Val Phe Thr Gln
 305 310 315 320
 Cys Phe Val Glu Ala Leu Glu Lys Ala Ser Lys Gln Leu Arg Phe Ala
 325 330 335
 Leu Lys Thr Tyr Phe Pro Tyr Thr Ser Pro Ser Leu Ala Met Val Leu
 340 345 350
 Leu Gln Asp Pro Gln Asp Ile Pro Arg Gly His Trp Leu Gln Thr Leu
 355 360 365
 Lys His Ile Ser Glu Leu Leu Arg Glu Ala Val Glu Asp Gln Thr His
 370 375 380
 Gly Ser Cys Gly Gly Pro Phe Glu Ser Trp Phe Leu Phe Ile His Phe
 385 390 395 400
 Gly Gly Trp Ala Glu Met Val Ala Glu Gln Leu Leu Met Ser Ala Ala
 405 410 415
 Glu Pro Pro Thr Ala Leu Leu Trp Leu Leu Ala Phe Tyr Tyr Gly Pro
 420 425 430
 Arg Asp Gly Arg Gln Arg Ala Gln Thr Met Val Gln Val Lys Ala Val
 435 440 445
 Leu Gly His Leu Leu Ala Met Ser Arg Ser Ser Ser Leu Ser Ala Gln
 450 455 460
 Asp Leu Gln Thr Val Ala Gly Gln Gly Thr Asp Thr Asp Leu Arg Ala
 465 470 475 480
 Pro Ala Gln Gln Leu Ile Arg His Leu Leu Leu Asn Phe Leu Leu Trp
 485 490 495
 Ala Pro Gly Gly His Thr Ile Ala Trp Asp Val Ile Thr Leu Met Ala
 500 505 510

His Thr Ala Glu Ile Thr His Glu Ile Ile Gly Phe Leu Asp Gln Thr
 515 520 525

Leu Tyr Arg Trp Asn Arg Leu Gly Ile Glu Ser Pro Arg Ser Glu Lys
 530 535 540

Leu Ala Arg Glu Leu Leu Lys Glu Leu Arg Thr Gln Val
 545 550 555

<210> 3

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 3

ctgccaacct gccatcttca g

21

<210> 4

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 4

aagagcagct agtacttctg g

21

<210> 5

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 primer

<400> 5

aggaaagtag gtcctgaggg

20